

ATTORNEY DOCKET NO.: 05015.0292U2  
PATENT

B<sup>3</sup> 17 10  
23. The article of claim ~~22~~, wherein the article is a bottle, sheet, film, tubing, profile, preform, fiber, container or tray.

REMARKS

The Office Action has rejected claims 1-19 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 14 have been amended to recite a lower limit of low molecular weight polyamide of about 2.5 weight percent. Support for this amendment is found in the specification at page 11, lines 11-13. Claims 1 and 14 have been amended to recite an upper limit of semi-crystalline polyester of about 97.5 weight percent. Support for this amendment is found, for example, in Example 2, pages 16-17 where it is demonstrated that the amount of polyamide in the polymer blend is measured in relation to the amount of polyester in the polymer blend. Claim 1 has also been amended to recite a lower limit of dicarboxylic acid of about 80 mole percent. Support for this amendment is evident from the corresponding upper limit of the additional dicarboxylic acid component of about 20 mole percent recited in Claim 4 as well as in the specification at page 8, lines 1-5. Claims 12, 13, 18 and 19 have been cancelled, without prejudice.

Claim 20 has been added to recite that the polymer blend of claim 1, has *inter alia*, an amount of low molecular weight polyamide from about 20 to greater than about 3 weight %. Claim 21 has been added to recite that the method of claim 14, *inter alia*, incorporates an amount of low molecular weight polyamide from about 20 to greater than about 3 weight %.

Claim 22 has been added to recite articles that have a haze value from 2 to 5 times less than a polymer blend comprising polyester terephthalate and MXD6. Support for the claim is found in previous claims 18 and 19 and Example 3, page 17. Claim 23 has been added to

**ATTORNEY DOCKET NO.: 05015.0292U2  
PATENT**

recite the form of the articles of claim 22. Support for this amendment is found, *inter alia*, on pages 12-13.

Claims 1-11, 14-17, and 20-23 are pending in the application.

**REJECTION OF CLAIMS 1-19 UNDER 35 USC § 112**

The Office Action has rejected claims 1-19 under 35 USC § 112. Each of the separate grounds of rejection is addressed individually.

The Office Action contends that claims 1 and 14 are unclear if or how the upper limit of "about 99.5 weight %" defining component I limits the polymer blend because its use exceeds 100 weight % of the composition. Claims 1 and 14 have been amended to clarify that the amount of components I and II in the polymer blend total 100 weight % of the polymer blend. Specifically, the highest amount of component I has been amended to recite "about 97.5 weight %" and the lowest amount of component II has been amended to recite "about 2.5 weight %." Applicants respectfully submit that these amendments clarify these aspects of claims 1 and 14.

The Office Action further alleges that claim 4 is unclear "how the additional dicarboxylic acid component can comprise up to 'about 20 mole %' of the total dicarboxylic acid given that the latter must comprise 'at least 85 mole %' of the dicarboxylic acid recited in the base claim." Claim 1 has been amended to recite the range "from at least about 80 mole %." Therefore, it is submitted that claim 4 is now clear.

**REJECTION OF CLAIMS 1-19 UNDER 35 USC § 102(B) OR, ALTERNATIVELY, UNDER 35 USC § 103(A)**

The Office action contends that claims 1-19 are either anticipated or rendered obvious by the following references: WO 93/20147; WO 98/39388; or WO 97/15629. Specifically, the Office Action states that these references "meet the requirements of the present claims both in terms of the types of materials and their contents." Each of these references will be addressed separately.

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**ATTORNEY DOCKET NO.: 05015.0292U2  
PATENT****Rejections in Light of WO-A-9320147 ("the '147 publication")**

The Office Action contends that the '147 publication either anticipates or renders obvious claims 1-19.

The '147 publication discloses a polyester/low molecular weight polyamide blend having an excellent gas barrier property and an improved flavor retaining property and clarity. The compositions of the '147 publication may contain up to 2 weight percent polyamide. As amended, claims 1 and 14 recite an amount of polyamide of from about 20 to about 2.5 weight percent. As such, claims 1 and 14 are not anticipated.

Furthermore, new claims 20 and 21 recite an amount of polyamide of from about 20 to about 3.0 weight percent. Therefore, the '147 publication does not anticipate the claims of the present invention.

Moreover, the claims are not obvious over the '147 publication. In particular, the '147 publication states that "[i]t has been determined that the use of [low molecular weight] polyamides at greater than two weight percent on the weight of the polyester cause undesirable haze and color." See the '147 publication at page 7, lines 32-35. Further, the accuracy of this statement is demonstrated by the data in Table VI on page 35. In that Table, the data show that an increase in the amount of low molecular weight polyamide results in a marked increase in haze. In light of this disclosure, there is no suggestion or motivation in the '147 publication to utilize an amount of polyamide of from about 2.5 (or 3.0) weight percent to about 20 weight percent. To the contrary, the '147 publication teaches away from increasing the amount of polyamide in the polymer blend because poor haze values will result.

New claims 22 and 23 are patentable over the '147 publication. As noted, the '147 publication clearly discloses that increasing the amount of low molecular weight polyamide in the polymer blend increases the haze of articles *e.g.*, bottles, formed from the polymer blend. Thus, there is no suggestion or motivation in this reference that articles can be formed from low molecular weight polyamide/semi-crystalline polyester where the haze values are from 2 to 5 times lower than blends prepared from polyester/MXD6.

**ATTORNEY DOCKET NO.: 05015.0292U2  
PATENT****Rejections in Light of WO/97/15629 ("the '629 publication")**

The Office Action also alleges that claims 1-19 are either anticipated or rendered obvious by the '629 publication.

The '629 publication discloses polyester blend compositions comprising from 98.0 to 99.95 weight percent polyester and from 2.0 to 0.05 weight percent of a polyamide. As in the '147 publication, the '629 publication discloses that low molecular weight polyamide amounts of "greater than two weight percent . . . cause undesirable levels of haze." See the '629 publication at page 7, lines 31-34. Therefore, for the same reasons set forth above regarding the '147 publication, the claimed invention is neither anticipated nor rendered obvious by the '629 publication.

**Rejections in Light of WO/98/39388 ("the '388 publication")**

The Office Action further contends that the '388 publication either anticipates or renders obvious claims 1-19.

Like the '147 and '625 publication, the '388 publication discloses polyester blend compositions comprising from 98.0 to 99.95 weight percent polyester and from 2.0 to 0.05 weight percent of a polyamide. Further, the '388 publication also states that "polyamides at greater than about two weight percent . . . of the polyester cause undesirable levels of haze." See the '388 publication at page 5, lines 27-29. Therefore, for the same reasons set forth above regarding the '147 and '629 publications, the claimed invention is neither anticipated nor rendered obvious by the '388 publication.

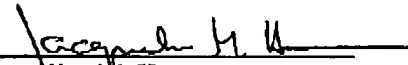
**CONCLUSION**

In light of the above amendments and arguments, Applicants respectfully request that the rejections be withdrawn.

**ATTORNEY DOCKET NO.: 05015.0292U2  
PATENT**

Payment in the amount of \$740.00 is to be charged to a credit card and such payment is authorized by the signed, enclosed document entitled: Credit Card Payment Form PTO-2038; however, the Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-0629.

Respectfully submitted,  
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**CERTIFICATE OF FACSIMILE TRANSMISSION**

I hereby certify that this AMENDMENT is being sent via facsimile transmission addressed to (703) 872-9311, ATTN: EXAMINER WOODWARD, GROUP 1711, Commissioner for Patents, Washington, D.C. 20231, on the date shown below.

  
Jacqueline M. Hutter  
W123600

Date

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ATTORNEY DOCKET NO.: 05015.0292U2  
PATENTVERSION WITH MARKINGS TO SHOW CHANGES MADE

Please cancel claims 12-13 and 18-19 without prejudice.

Please amend claims 1 and 14 as follows:

1. (Twice Amended) A polymer blend comprising:
  - I. from about 80 to about [99.5] 97.5 weight % of a semi-crystalline polyester, which comprises the residues of
    - (A) a dicarboxylic acid component comprising repeat units from at least about [85] 80 mole % of terephthalic acid, isophthalic acid, naphthalene-2,6-dicarboxylic acid or a mixture thereof; and
    - (B) a glycol component comprising repeat units from at least about 85 mole % ethylene glycol, wherein components A) and B) are based on 100 mole % dicarboxylic acid and 100 mole % of glycol; and
  - II. from about 20 to about [2.1] 2.5 weight % of a low molecular weight polyamide, having a number average molecular weight of less than about 15,000, having the repeating unit A-D, wherein A is the residue of a dicarboxylic acid comprising adipic acid, isophthalic acid, terephthalic acid, 1,4-cyclohexanedicarboxylic, resorcinol dicarboxylic acid, or naphthalenedicarboxylic acid, or a mixture thereof, and D is a residue of a diamine comprising *m*-xylylene diamine, *p*-xylylene diamine, hexamethylene diamine, ethylene diamine, or 1,4-cyclohexanedimethylamine, or a mixture thereof,wherein components I and II total 100 weight % of the polymer blend.

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ATTORNEY DOCKET NO.: 05015.0292U2  
PATENT

14. (Twice Amended) A method for reducing gas permeability of polyester comprising blending:

I. from about 80 to about [99.5] 97.5 weight % of a semi-crystalline polyester, which comprises the residues of:

(A) a dicarboxylic acid component comprising repeat units from at least about 80 mole % of terephthalic acid, naphthalene-2,6-dicarboxylic acid or a mixture thereof; and

(B) a glycol component comprising repeat units from at least about 85 mole% ethylene glycol,

wherein components A) and B) are based on 100 mole % dicarboxylic acid and 100 mole % of glycol; and

II. from about 20 to about [2.1] 2.5 weight % of a low molecular weight polyamide having a number average molecular weight of less than about 15,000 having the repeating unit A-D, wherein A is the residue of a dicarboxylic acid comprising adipic acid, isophthalic acid, terephthalic acid, 1,4-cyclohexanedicarboxylic, resorcinol dicarboxylic acid, or naphthalenedicarboxylic acid, or a mixture thereof, and D is the residue of a diamine comprising *m*-xylylene diamine, *p*-xylylene diamine, hexamethylene diamine, ethylene diamine, or 1,4-cyclohexanedimethylamine, or a mixture thereof, wherein components I and II total 100 weight % of the polymer blend.

Please add claims 20-23 as follows:

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**ATTORNEY DOCKET NO.: 05015.0292U2  
PATENT**

20. The polymer blend of claim 1, wherein the amount of low molecular weight polyamide is from about 20 to greater than about 3 weight %, having a number average molecular weight of less than about 15,000, having the repeating unit A-D, wherein A is the residue of a dicarboxylic acid comprising adipic acid, isophthalic acid, terephthalic acid, 1,4-cyclohexanedicarboxylic, resorcinol dicarboxylic acid, or naphthalenedicarboxylic acid, or a mixture thereof, and D is a residue of a diamine comprising *m*-xylylene diamine, *p*-xylylene diamine, hexamethylene diamine, ethylene diamine, or 1,4-cyclohexanedimethylamine, or a mixture thereof.
21. The method of claim 14, wherein the amount of low molecular weight polyamide is from about 20 to greater than about 3 weight %, having a number average molecular weight of less than about 15,000, having the repeating unit A-D, wherein A is the residue of a dicarboxylic acid comprising adipic acid, isophthalic acid, terephthalic acid, 1,4-cyclohexanedicarboxylic, resorcinol dicarboxylic acid, or naphthalenedicarboxylic acid, or a mixture thereof, and D is a residue of a diamine comprising *m*-xylylene diamine, *p*-xylylene diamine, hexamethylene diamine, ethylene diamine, or 1,4-cyclohexanedimethylamine, or a mixture thereof.
22. An article comprising a polymer blend comprising:
- I. from about 80 to about 97.5 weight % of a semi-crystalline polyester, which comprises the residues of
    - (A) a dicarboxylic acid component comprising repeat units from at least about 80 mole % of terephthalic acid, naphthalene-2,6-dicarboxylic acid or a mixture thereof; and
    - (B) a glycol component comprising repeat units from at least about 85 mole % ethylene glycol,

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**ATTORNEY DOCKET NO.: 05015.0292U2  
PATENT**

wherein components A) and B) are based on 100 mole % dicarboxylic acid and 100 mole % of glycol; and

- II. from about 20 to about 2.5 weight % of a low molecular weight polyamide, having a number average molecular weight of less than about 15,000, having the repeating unit A-D, wherein A is the residue of a dicarboxylic acid comprising adipic acid, isophthalic acid, terephthalic acid, 1,4-cyclohexanedicarboxylic, resorcinol dicarboxylic acid, or naphthalenedicarboxylic acid, or a mixture thereof, and D is a residue of a diamine comprising *m*-xylylene diamine, *p*-xylylene diamine, hexamethylene diamine, ethylene diamine, or 1,4-cyclohexanedimethylamine, or a mixture thereof,

wherein components I and II total 100 weight % of the polymer blend and wherein the article has a haze value of from about 2 to about 5 times less than a polymer blend comprising polyester terephthalate and MXD6.

23. The article of claim 22, wherein the article is a bottle, sheet, film, tubing, profile, preform, fiber, container or tray.

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